

gation functions on the display of handheld device. These navigational keys can include the connect and disconnect keys as mentioned herein as well.

[0041] Referring now to FIG. 2A, one example of the navigation tool 128 includes a 4-way navigation button configuration with or without a centralized select key 110. This type of navigational key arrangement allows the user to navigate a cursor 275 on the display screen 322 in addition to navigating forms, web sites and other cursor-navigable pages presented on the display screen 322. Another type of navigational key arrangement, shown in FIG. 2B, has an inner key surrounded by an outer ring. The inner key is used to make selections of items that have been user-designated on the display screen 322 of the handheld electronic device 300. The outer ring can function as a scrolling device wherein a clockwise rotation moves the cursor down the page displayed on the screen 322 on the handheld electronic device 300 and a counter-clockwise rotation moves the cursor up the page. In other exemplary embodiments, the scrolling can be implemented in opposite directions as well. Additionally, arrows or other indicators can be provided in the outer ring to provide left and right navigation in addition to rotation indicators.

[0042] The alphabetic key arrangements are useful when entering text, but they do not provide easy navigation within the application portion of the display screen 322. Thus, a navigational key arrangement 285 is provided in other embodiments such as those shown in FIGS. 2A and 2B. These navigational key arrangements can be shown on the display screen 322 simultaneously with the alphabetic key arrangements or without the alphabetic key arrangements. When only the navigational key arrangement is shown in addition to the application running, a larger portion of display screen 322 can be devoted to the application running on the device 300. The navigational keys can be implemented such that a centralized navigation key is located within a row of other navigational keys. The navigation key enables the user to direct cursor navigation on the screen 322 of handheld device 300.

[0043] Referring to FIG. 2A, the navigational key arrangement 285 as shown is separated from the alphabetic key arrangement 280 by a dividing line 287 and from the currently running application by line 289. The navigational key arrangement 285 has a centralized navigation tool 128 that has directional keys to direct the cursor on the screen 322. The top key 116 directs a cursor 275 in an upward fashion on the display screen 322. The left key 114 directs the cursor 275 towards the left side of the display screen 322. Likewise, the right key 118 directs the cursor 275 towards the right side of the display screen 322 and the bottom key 112 directs the cursor 275 towards the bottom of the display screen 322. The center key 110 allows the user to make a selection of a user-designated item. In addition to the centralized navigation tool 128, the navigation row has a connect key 106 to place and answer telephone calls, a menu key 107 which displays a menu associated with a given application page, an escape key 109 which returns to the previously displayed application page, and a disconnect key 108 which disconnects or terminates a telephone call. While these keys are shown in FIG. 2A, other exemplary embodiments will not display the connect 106 and disconnect keys 108 unless the telephone application is running. Alternatively, the connect and disconnect keys 106, 108 appear when a telephone call is received when running another application.

[0044] In another exemplary embodiment, when a telephone application is running or when the device 300 is oper-

ating in a telephone mode, a telephone key arrangement 282 is shown on the HTS display screen 322 of the handheld device 300 shown in FIG. 2B. This telephone key arrangement is in the ITU standard phone layout as described above and with which users are familiar. In addition, a navigational key arrangement 285 is provided above the telephone key arrangement 282. Similar to other navigation row arrangements, this navigational key arrangement 285 has a centralized scrolling navigation key 440, a connect key 146, a menu key 147, an escape key 149, and disconnect key 148. The centralized navigation key 440 is one that allows the user to scroll through a list of items and select a user-designated item. The outer ring 442 of the centralized scrolling navigation key 440 allows the user to navigate in a single direction such as up or down. This can be achieved by the user placing their finger inside the ring and moving in a clockwise or counterclockwise direction. The select key 444 in the center of the outer ring 442 enables the user to select an item that was designated through the use of the outer ring 442.

[0045] In addition to the keys presented on the display screen 322, the handheld device 300 shown in FIG. 2B has a programmable physical key 150 on the side of the device 300. This programmable physical key 150 can be programmed to provide various functions relating to the handheld device 300. For example, it could be used to switch between telephone and data/text modes of operation. In another embodiment this key 150 would function as a way to return to a home screen.

[0046] In still another embodiment, a processing subsystem is configured to be installed in a handheld device 300, having capabilities for at least voice and email modes of communication, comprising an HTS display screen 322. The processing subsystem serves as an operating system for the incorporating device 300. The processing subsystem preferably includes a microprocessor 338 and a media storage device connected with other systems and subsystems of the device 300. The microprocessor 338 can be any integrated circuit or the like that is capable of performing computational or control tasks. The media storage device can exemplarily include a flash memory 338, a hard drive, a floppy disk, RAM 326, ROM, and other similar storage media.

[0047] As stated above, the operating system software controls operation of the incorporating handheld device 300. The operating system software is programmed to control operation of the handheld device 300 and is configured to transmit signals to a visual display that variously presents visibly different key arrangements as a function of the mode of operation of the incorporating device 300.

[0048] Preferably, the handheld device 300 is sized for portable use and adapted to be contained in a pocket. In one exemplary embodiment, the handheld device 300 is sized to be cradled in the palm of the user's hand. The handheld device 300 is advantageously sized such that it is longer than it is wide. This preserves the device's 300 cradleability while maintaining surface real estate for such features as the display screen 322 or an optional keyboard 332. In a development of this embodiment, the handheld device 300 is sized such that the width of the handheld device 300 measures between approximately two and three inches, thereby facilitating the device 300 to be palm cradled. Furthermore, these dimension requirements may be adapted in order to enable the user to easily carry the device 300.

[0049] Further aspects of the environments, devices and methods of employment described hereinabove are expanded upon in the following details. The handheld electronic device